REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1, 4-9 and 11-20 are pending in the present application. Claims 1, 4-5, 9, 11-14 and 16-19 are amended; and Claims 2-3 are canceled without prejudice or disclaimer by the present amendment. Support for the amended claims can be found in original Claims 2-3, Figs. 4-6, and pp. 22-34 of the originally filed specification. No new matter is presented. In the Office Action,

In the Office Action, Claims 1-9 and 11-20 are rejected under 35 U.S.C. § 112, second paragraph; and Claims 1-9 and 11-20 are rejected under 35 U.S.C. § 102(e) as anticipated by Shackleford et al. (U.S. 7,571,200, herein Shackleford).

Regarding the rejection under 35 U.S.C. § 112, second paragraph, the portions of Claims 1, 9 and 11 cited as the basis of this rejection are omitted from the claims by the present amendment, thereby rendering this rejection moot.

The Office Action rejects Claims 1-9 and 11-20 under 35 U.S.C. § 102(e) as anticipated by Shackleford. In response to this rejection, Applicant respectfully submits that amended independent Claims, 1, 9 and 11 recite novel features clearly not disclosed by Shackelford.

Independent Claim 1, for example, is amended to incorporate the features of Claims 2 and 3, and recites an apparatus for generating pseudorandom sequences comprising:

> a two-dimensional cellular automata random number generator configured to generate a first sequence;
> a 2-by-L cellular automata random number generator configured to generate a second sequence;
> a *controllable cellular automata random number generator* configured to generate a third sequence by *determining cell states based on a corresponding cell control word and/or a corresponding rule control word*, wherein the cell control word is generated by the 2-by-L cellular automata random number generator and the rule control word is generated by the two-dimensional cellular automata random number generator; and

adders configured to perform bit-to-bit mod2 sum of the first, second and third sequences.

Independent Claims 9 and 11, while directed to alternative embodiments, are similarly amended.

Turning to the applied reference, Figs. 2-6 and col. 4, l. 12 – col. 6, l. 41 of Shackleford, cited in the Office Action, describes a pseudo-random number generator that uses a linear feedback shift register (LFSR) random number generator (RNG) 202 to generate a first pseudo-random number, and a cellular automata (CA) RNG 204 to generate a second pseudo-random number. The first and second pseudo-random numbers are then XORed to output a pseudo-random number.

Thus, the RNGs described in Shackleford, which are used to generate the first and second pseudo-random numbers, are a LFSR RNG and one or more similarly configured CA RNGs. Shackelford, therefore, fails to teach or suggest that his generator includes both a "two-dimensional *cellular automata* random number generator configured to generate a first sequence" and "a 2-by-L *cellular automata* random number generator configured to generate a second sequence", as recited in amended independent Claim 1. In clear contrast, the configuration described in Shackelford only uses one type of CA RNG, while the other RNG is in the form of a LFSR.

Therefore, Shackelford fails to disclose a random number generator that includes both a *two-dimensional CA* RNG, and a *2-by-L CA* RNG, as recited in amended independent Claim 1.

Claim 1 is further amended to recite that the apparatus includes a "*controllable cellular automata random number generator* configured to generate a third sequence by *determining cell states based on a corresponding cell control word and/or a corresponding rule control word*, wherein the cell control word is generated by the 2-by-L cellular automata

random number generator and the rule control word is generated by the two-dimensional cellular automata random number generator".

As discussed above, <u>Shackelford</u> merely describes an apparatus that includes an LFSR RNG and one or more similarly configured CA RNGs, but does not disclose any RNG that is similar in configuration to the ***controllable CA RNG*** recited in amended Claim 1.
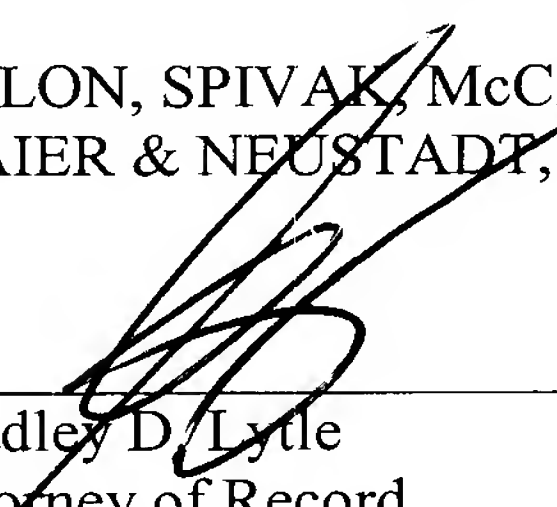
More specifically, <u>Shackelford</u> fails to disclose an apparatus for generating pseudorandom sequences that includes both a "a ***two-dimensional CA*** RNG configured to generate a first sequence", "a ***2-by-L CA*** RNG configured to generate a second sequence", and "a ***controllable CA RNG*** configured to generate a third sequence by ***determining cell states based on a corresponding cell control word and/or a corresponding rule control word***, wherein the cell control word is generated by the 2-by-L cellular automata random number generator and the rule control word is generated by the two-dimensional cellular automata random number generator", as recited in amended independent Claim 1.

Accordingly, Applicant respectfully requests that the rejection of Claim 1 (and the claims that depend therefrom under 35 U.S.C. § 102 be withdrawn. For substantially similar reasons, it is also submitted that amended independent Claims 9 and 11 (and the claims that depend therefrom) also patentably define over <u>Shackelford</u>.

Consequently, in view of the present amendment and in light of the foregoing comments, it is respectfully submitted that the invention defined by Claims 1, 4-9 and 11-20 is patentably distinguishing over the applied references. The present application is therefore believed to be in condition for allowance and an early and favorable reconsideration of the application is therefore requested.

Respectfully submitted,

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